

## Sprayer Calibration Techniques

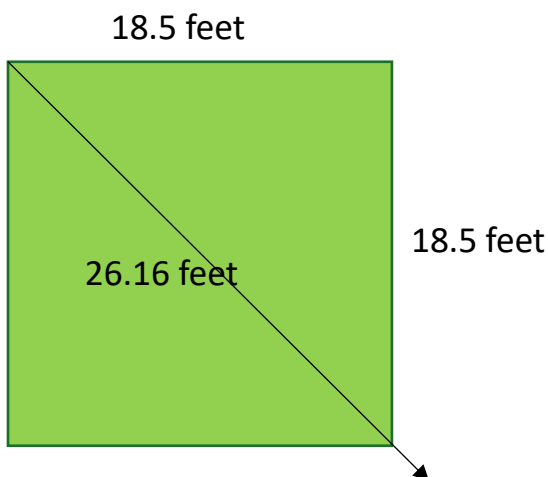
Calibrating a sprayer is critical for applying the correct amount of herbicide. Over application can injure desirable vegetation and under application can cause the weeds to build up resistance to the chemicals used over time.

### Calibrating a Handgun (any tank larger than a 2-4-gallon hand-carried sprayer)

Items you will need: measuring tape (2), flags/paint, collection bucket, stop watch, measuring device.

1. Measure and mark an area 18.5 foot by 18.5 foot square. This is  $1/128^{\text{th}}$  of an acre. If possible select an area with vegetation similar to the area you will be spraying.
2. Fill the sprayer with water. At least a quarter to half full.
3. Set the pressure at 25 to 40 psi.
4. Set the desired flow rate of the handgun that you intend to make most of your spray applications with.
5. Spray the area marked. Keep track of the time it takes to spray the area to wet, but not runoff.
6. Collect in the bucket for the length of time it took to spray the marked square area.
7. Measure this amount.
8. This will give you a number in ounces. This is directly equivalent to gallons/acre for application.
9. Divide this amount by the gallons in your sprayer. This tells you how much of 1 acre will be treated with a full sprayer tank. Be sure to put your answer into a fraction because you are measuring  $1/128^{\text{th}}$  of an acre; 1 over your answer =  $1/\underline{\hspace{1cm}}$ .
10. Multiply this percentage by the per acre rate and you will know how much chemical to put in your tank.

Example: You have a 25-gallon sprayer. It took you 75 seconds to spray the 18.5 x 18.5 foot square. You collect 150 ounces in the 75 seconds when measured. Therefore, you are applying 150 gallons/acre. Divide 150 gallons by your 25-gallon sprayer =  $1/6$  of an acre is being treated by your sprayer. Now you can take  $1/6$  of the acre rate for the chemical you have selected to use and place that in your 25-gallon sprayer and you will be at the labeled rate.



Seconds to spray the marked areas: \_\_\_\_\_

Amount of water collected: \_\_\_\_\_

What fraction of acre treated: \_\_\_\_\_

How much herbicide to add: \_\_\_\_\_

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## Stationary Calibration Method for Boom Sprayers

1. Fill the spray tank approximately  $\frac{1}{2}$  full with clean water. If a drift control agent will be used during the application, calibrate with a drift control agent.
2. Turn the sprayer on and measure the swath width (SW) in inches or feet the distance the booms cover.
3. Collect the spray output from all the nozzles for 1 minute. Its best to collect from each nozzle individually (and then add them together) so you can compare that they are putting out the same or very similar volumes. This will help you know if you need to fix anything on the sprayer.
4. Measure the volume collected in fluid ounces and divide by 128 to determine gallons per minute (GPM).
5. Select the speed, in miles per hour, that will be used for spraying.
6. Determine the gallons per acre (GPA) being applied with one of the following formulas:

$$\text{GPA} = \frac{5940 \times \text{GPM}}{\text{mph} \times \text{SW (inches)}}$$

or

$$\text{GPA} = \frac{495 \times \text{GPM}}{\text{mph} \times \text{SW (feet)}}$$

7. Chemical needed formula:  $\frac{\text{Chemical rate} \times \text{tank volume (in gallons)}}{\text{GPA}}$

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Determining MPH without an odometer:       $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$       D: \_\_\_\_\_ ft  
T: \_\_\_\_\_ sec

1 foot/second = 0.682 miles per hour

Example: It takes 30 seconds to travel 250 feet = 8.3333 feet/second = 5.7 miles/hour

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Feet per Second: \_\_\_\_\_ x 0.682 = \_\_\_\_\_ MPH

Swath Width (SW) \_\_\_\_\_

Gallons Per Minute: Nozzle 1: \_\_\_\_\_ oz Nozzle 2: \_\_\_\_\_ oz Nozzle 3: \_\_\_\_\_ oz

Nozzle 4: \_\_\_\_\_ oz Total ounces: \_\_\_\_\_ Total GPM: \_\_\_\_\_

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